MA 35 L(85)-1

CURRENT INDUSTRIAL REPORTS

Internal Combustion Engines

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1985

U.S. Department of Commerce
BUREAU OF THE CENSUS

MA35L(85)-1
Issued July 1986

SUMMARY OF FINDINGS

In 1985, a total of 11,228,269 internal combustion engines (except outboard, nondiesel automotive and aircraft) were shipped or produced and incorporated at the same plant, representing a 10-percent decrease from the 12,540,727 produced in 1984. Gasoline or gas-gasoline engines totaled 10,543,818 in 1985, 10 percent below the figure of 11,756,715 for 1984. The number of nonautomotive diesel and dual-fuel engines produced in 1985 amounted to 174,764, 17 percent lower than the 211,019 reported for 1984. 501,113 automotive diesel engines were produced, down 11 percent compared to the 564,286 shown produced in 1984. Production of gas engines (LPG and natural) was 8,574 in 1985, 2 percent lower than the 8,707 produced in 1984.

A description of the survey methodology and related information appears on page 9.

Table 1. INTERNAL COMBUSTION ENGINES, BY TYPE OF ENGINE: 1985 AND 1984

(Engines and quantity in units; value in thousands of dollars)

Type of engine	Engines produced[1]	Total shipments and interplant transfers		Shipments to other companies		Interplant transfers		Engines produced and incorporated[2]
		Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	
1985								
Total	11,228,269	(D)	5,386,256	(D)	[3]3,990,614	(D)	[3]1,395,642	(D)
Gasoline (except outboard, aircraft, and automotive)	10,543,818	(D)	1,179,465	(D)	1,106,213	(D)	73,252	(D)
Nonautomotive diesel (except aircraft)	174,764	148,621	1,220,950	97,541	801,948	51,080	419,002	26,143
Automotive diesel	501,113	501,113	2,846,488	275,723	[4]1,943,100	225,390	903,388	-
Gas (except aircraft and automotive)	8,574	7,883	139,353	[3]7,883	[3]139,353	([3])	([3])	691
1984								
Total	12,540,727	[4]10,730,501	5,718,553	[3]10,087,762	[3]4,310,914	[3] [4]642,739	[3]1,407,639	[4]1,810,226
Gasoline (except outboard, aircraft, and automotive)	11,756,715	9,982,035	1,266,742	9,702,187	1,190,929	279,848	75,813	1,774,680
Nonautomotive diesel (except aircraft)	211,019	[4]176,071	1,462,694	105,383	937,287	[4]70,688	525,407	34,948
Automotive diesel	564,286	[4]564,286	2,882,595	272,083	2,076,176	[4]292,203	806,419	([4])
Gas (except aircraft and automotive)	8,707	8,109	r106,522	[3] r8,109	[3] r106,522	([3])	([3])	598

- Represents zero. (D) Data withheld to avoid disclosing figures for individual companies. rRevised by 5 percent or more from previously published figures.

[1]Represents total number of engines shipped or produced and incorporated into products at the same establishment.
[2]Represents engines produced and incorporated (in the same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.
[3]Data for gas engines shipped as interplant transfers have been included with shipments to other companies to avoid disclosing figures for individual companies.
[4]Data for automotive diesel engines produced and incorporated are included with interplant transfers to avoid disclosing figures for individual companies.

Address inquiries concerning these figures to U.S. Department of Commerce, Bureau of the Census, Industry Division, Washington, D.C. 20233, or call ED Coan, (301) 763-7476.
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Table 2. GASOLINE ENGINES, BY HORSEPOWER RATING: 1985 AND 1984

(Engines and quantity in units; value in thousands of dollars)

Product code	Product description	Number of companies	Engines produced[1]	Total shipments and interplant transfers		Shipments to other companies		Interplant transfers		Engines produced and incorporated[2]
				Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	
	1985									
35191	Gasoline engines	24	10,543,818	(D)	1,179,465	(D)	1,106,213	(D)	73,252	1,453,539
35191 01	Under 3 hp	6								
35191 02	3 to under 6 hp	9	9,458,185							
35191 03	6 to under 11 hp	9		(D)	893,287	(D)	869,818	(D)	23,469	
35191 11	11 to under 15 hp	7	875,103							
35191 12	15 to under 21 hp	7								
35191 13	21 to under 31 hp	6	19,654							
35191 14	31 to under 51 hp	7	13,970							1,453,539
35191 15	51 to under 61 hp	5								
35191 16	61 to under 71 hp	4	55,790							
35191 17	71 to under 91 hp	4		(D)	286,178	168,252	236,395	(D)	49,783	
35191 18	91 to under 151 hp	5								
35191 19	151 to under 201 hp	7	121,116							
35191 20	201 to under 301 hp	4								
35191 21	301 hp and over	3								
	1984									
35191	Gasoline engines	24	11,756,715	9,982,035	1,266,742	9,702,187	1,190,929	279,848	75,813	1,774,680
35191 01	Under 3 hp	6								
35191 02	3 to under 6 hp	9	10,440,071			8,473,865	692,729			
35191 03	6 to under 11 hp	9								
35191 11	11 to under 15 hp	7	1,111,030			1,071,229	284,465			
35191 12	15 to under 21 hp	7								
35191 13	21 to under 31 hp	6	25,334			19,696	20,091			
35191 14	31 to under 51 hp	7	17,260	9,982,035	1,266,742	16,987	22,515	279,848	75,813	1,774,680
35191 15	51 to under 61 hp	5	54,506			15,948	21,948			
35191 16	61 to under 71 hp	4								
35191 17	71 to under 91 hp	4								
35191 18	91 to under 151 hp	5								
35191 19	151 to under 201 hp	7	108,514			104,462	149,181			
35191 20	201 to under 301 hp	4								
35191 21	301 hp and over	3								

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended rpm.

(D) Data withheld to avoid disclosing figures for individual companies.

[1] Represents total number of engines shipped or produced and incorporated into products at the same establishment.
[2] Represents engines produced and incorporated (in the same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Table 3. NONAUTOMOTIVE DIESEL ENGINES, BY HORSEPOWER RATING: 1985 AND 1984

(Engines and quantity in units; value in thousands of dollars)

Product code	Product description	Number of companies	Engines produced[1]	Total shipments and interplant transfers		Shipments to other companies		Interplant transfers		Engines produced and incorporated[1]
				Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	
	1985									
35193	Nonautomotive diesel engines.	21	174,764	148,621	1,220,950	97,541	801,948	51,080	419,002	26,143
35193 11	Under 21 hp.	5	18,164	99,575	477,195	9,178	18,996	36,794	202,142	18,204
35193 12	21 to under 51 hp.	9					8,572			
35193 13	51 to under 71 hp.	9	11,127			6,217	19,481			
35193 14	71 to under 101 hp.	9	15,994			5,812	23,597			
35193 15	101 to under 151 hp.	13	46,348			32,631	150,619			
35193 16	151 to under 201 hp.	12	26,146			8,943	53,789			
35193 17	201 to under 251 hp.	9	25,949	49,046	743,755	17,398	146,473	14,286	216,860	7,939
35193 18	251 to under 301 hp.	9	5,791			3,360	40,746			
35193 19	301 to under 351 hp.	6	7,209			3,493	46,666			
35193 20	351 to under 401 hp.	4	6,732			4,464	66,520			
35193 21	401 to under 451 hp.	4								
35193 22	451 to under 501 hp.	3	5,695			3,743	79,700			
35193 23	501 to under 601 hp.	4	2,595			1,307	38,804			
35193 24	601 to under 701 hp.	3								
35193 25	701 to under 801 hp.	5								
35193 26	801 to under 1,001 hp.	5	707			469	20,939			
35193 27	1,001 to under 1,501 hp.	6	989			252	19,539			
35193 28	1,501 hp and over.	9	1,318			274	67,507			
	1984									
35193	Nonautomotive diesel engines.	21	211,019	176,071	1,462,694	105,383	937,287	70,688	525,407	34,948
35193 11	Under 21 hp.	5	16,304	106,429	513,331	10,850	23,580	48,040	258,299	25,996
35193 12	21 to under 51 hp.	9	8,479				12,737			
35193 13	51 to under 71 hp.	9	12,014			5,282	15,272			
35193 14	71 to under 101 hp.	9	18,503			6,962	28,404			
35193 15	101 to under 151 hp.	13	42,479			25,083	110,402			
35193 16	151 to under 201 hp.	12	34,646			10,212	64,637			
35193 17	201 to under 251 hp.	8	40,000	69,642	949,363	23,972	201,924	22,648	267,108	8,932
35193 18	251 to under 301 hp.	9	9,799			5,076	60,491			
35193 19	301 to under 351 hp.	6	9,009			5,297	71,481			
35193 20	351 to under 401 hp.	5	8,271			6,008	86,195			
35193 21	401 to under 451 hp.	4								
35193 22	451 to under 501 hp.	3	5,067			3,350	73,957			
35193 23	501 to under 601 hp.	3	2,061			1,099	30,876			
35193 24	601 to under 701 hp.	3	1,323			899	29,830			
35193 25	701 to under 801 hp.	5	778			560	23,102			
35193 26	801 to under 1,001 hp.	5	875			357	30,806			
35193 27	1,001 to under 1,501 hp.	6	1,411			376	73,593			
35193 28	1,501 hp and over.	8								

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended rpm.

[1] Represents engines produced and incorporated (in the same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and related products.

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Table 4. AUTOMOTIVE DIESEL ENGINES, BY HORSEPOWER RATING: 1985 AND 1984

Product code	Product description	Number of companies	Engines[1]	
			1985	1984
35194	Automotive diesel engines	7	501,113	564,286
35194 11	Under 151 hp	3	276,827	317,826
35194 12	151 to under 201 hp	6		
35194 13	201 to under 226 hp	4	70,023	65,252
35194 14	226 to under 251 hp	4	15,010	20,330
35194 15	251 to under 276 hp	3	8,044	8,594
35194 16	276 hp and over	5	131,209	152,284

[1] Represents total number of engines shipped or produced and incorporated into products at the same establishment

Table 5. GAS ENGINES (EXCEPT AUTOMOTIVE), BY HORSEPOWER RATING: 1985 AND 1984

(Engines and quantity in units; value in thousands of dollars)

Product code	Product description	Number of companies	Engines produced[1]	Shipments and interplant transfers[2]		Engines produced and incorporated[3]
				Quantity	Value f.o.b. plant	
	1985					
35196	Natural gas and LPG engines	9	8,574	7,883	139,353	691
35196 11	Under 501 hp	9	8,574	7,883	139,353	691
35196 12	501 hp and over	3				
	1984					
35196	Natural gas and LPG engines	10	r8,707	8,109	r106,522	598
35196 11	Under 501 hp	10	r8,707	8,109	r106,522	598
35196 12	501 hp and over	3				

r Revised by 5 percent or more from previously published figures.

[1] Represents total number of engines shipped or produced and incorporated into products at the same establishment.
[2] Shipments to other companies and interplant transfers are combined to avoid disclosing figures for individual companies.
[3] Represents engines produced and incorporated (in the same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Table 6. ENGINES, BY PISTON DISPLACEMENT AND FUEL SYSTEM: 1985 AND 1984

Piston displacement	Gasoline		Nonautomotive diesel		Automotive diesel	
	1985	1984	1985	1984	1985	1984
Total	10,543,818	11,756,715	174,764	211,019	501,113	564,286
Under 21 cubic inches	9,998,793	11,133,342				
21 to under 31 cubic inches						
31 to under 51 cubic inches	311,950	384,521				
51 to under 76 cubic inches	45,750	57,291	21,989	28,755		
76 to under 126 cubic inches	41,203	47,997				
126 to under 151 cubic inches	18,563	21,329				
151 to under 176 cubic inches	4,500	10,756	4,224	7,965		
176 to under 201 cubic inches				15,172		
201 to under 226 cubic inches			30,792			
226 to under 251 cubic inches				23,942	501,113	564,286
251 to under 301 cubic inches			10,816			
301 to under 351 cubic inches			7,656	11,378		
351 to under 401 cubic inches	123,059	101,479	44,292	52,965		
401 to under 501 cubic inches						
501 to under 601 cubic inches				12,487		
601 to under 801 cubic inches			42,946	20,920		
801 to under 1,001 cubic inches				25,280		
1,001 to under 3,001 cubic inches			12,049	10,333		
3,001 cubic inches and over				1,822		

Note: Represents total number of engines shipped or produced and incorporated into products at the same establishment.

Table 7. INTERNAL COMBUSTION ENGINES (EXCEPT OUTBOARD, AUTOMOTIVE, AND AIRCRAFT), BY TYPE OF ENGINE AND END APPLICATION: 1985 AND 1984

End application	Gasoline engines		Nonautomotive diesel engines	
	1985	1984	1985	1984
Total	10,543,818	11,756,715	174,764	211,019
Oil field and petroleum related generating and stationary equipment	1,680	2,183		
Other generator sets			20,550	[r]27,489
Irrigation	776,735	965,254		
Chain saws				
Off-highway mobile construction equipment	196,924	183,161	70,390	74,515
Marine, except outboard				
Railroad, motive power type	-	-	1,016	1,110
Agriculture vehicular	226,420	277,547	30,994	50,568
Garden tractors			-	-
Lawn, home, and recreational equipment	8,460,939	9,301,888	-	-
Other general industrial	881,192	1,026,682	51,814	57,337

- Represents zero. [r]Revised by 5 percent or more from previously published figures.

Table 8. COMPARISON OF VALUES OF SHIPMENTS OF INTERNAL COMBUSTION ENGINES, AS REPORTED IN THE MA35L, THE 1984 ANNUAL SURVEY OF MANUFACTURES, AND THE 1982 CENSUS OF MANUFACTURES

(Value in thousands of dollars)

Product code	Product description	1984			1982	
			Annual Survey of Manufactures			
		MA35L	Value	Standard error of estimates[1]	MA35L	Census of Manufactures
3519	Internal combustion engines n.e.c.	(2)	(2)	(2)	(2)	8,972.4
35191	Gasoline engines, (except outboard, aircraft, automobile, truck, bus, and tank)	1,266.7	1,149.9	1	999.9	1,001.8
35193	Diesel and semidiesel engines (except automotive)	1,462.7	1,458.0	1	1,545.8	1,548.2
35194	Diesel and semidiesel engines (automotive)	2,882.6	2,910.6	1	1,715.6	1,715.6
35196	Gas engines (except gas turbines)	r106.5	73.3	9	99.6	99.6
35195	Outboard motors	(3)	(3)	(3)	(3)	1,143.4
35197	Tank and converted internal combustion engines					
35199	Parts and accessories for internal combustion engines	(3)	(3)	(3)	(3)	3,405.7
35190 00	Internal combustion engines n.e.c., n.s.k., typically for establishments with 20 employees or more (see note)	(4)	(4)	(4)	(4)	31.4
35190 02	Internal combustion engines n.e.c., n.s.k., typically for establishments with less than 20 employees (see note					26.8

Note: In the 1982 Census of Manufactures, shipments data for establishments of small companies (typically those with fewer than 20 employees for SIC 3519) were estimated from administrative records data rather than collected on census questionnaires. These shipments are included in product code 35190 02. Products not adequately identified by detail product were coded to product code 35190 00.

N.e.c. Not elsewhere classified. N.s.k. Not specified by kind. rRevised by 5 percent or more from previously published figures.

[1]The annual survey of manufactures percentage standard errors shown are the approximate relative errors of the estimates of level. A more detailed description of the standard error of estimate is given in the introduction of the annual survey of manufactures, Value of Product Shipments, M84(AS)-2, under "Qualifications of the Data."

[2]Where possible, the total value of shipments of the primary products of industries included in Current Industrial Reports (CIR) have been benchmarked to the 1982 Census of Manufactures. However, this was not possible for SIC code 3519 because this CIR excludes product classes 35195 (outboard motors), 35197 (tank and converted internal combustion engines), and 35199 (parts and accessories for internal combustion engines).

[3]Data for this product class are collected only in the census of manufactures and annual survey of manufactures.

[4]Detail data available only for the census of manufactures. A substantial portion of these data are derived from administrative records, see note above.

Table 9. SHIPMENTS, EXPORTS, IMPORTS, AND APPARENT CONSUMPTION OF INTERNAL COMBUSTION ENGINES: 1985 AND 1984

(Quantity in units; value in thousands of dollars)

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise[1]			Percent exports to manufacturers' shipments		Imports for consumption[3]		Apparent consumption[4]		Percent imports to apparent consumption	
		Quantity	Value f.o.b. plant	Quantity	Value at port	Estimated producers' value[2]	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	1985													
	Total	(D)	5,386,256	1,268,515	898,375	827,044	(D)	15.4	1,441,695	535,063	(D)	5,094,275	(D)	10.5
35194	Automotive diesel engines	501,113	2,846,488	61,314	333,193	306,737	12.2	10.8	47,182	61,938	486,981	2,601,689	9.7	2.4
35193	Nonautomotive diesel engines	148,621	1,220,950	41,725	387,920	357,119	28.1	29.2	168,522	301,101	275,418	1,164,932	61.2	25.8
35191	Gasoline engines	(D)	1,179,465	1,164,164	140,382	129,236	(D)	11.0	1,225,991	172,024	(D)	1,327,654	(D)	13.0
35196	Gas and liquefied petroleum gas engines	7,883	139,353	1,312	36,880	33,952	16.6	24.4						
	1984													
	Total	(D)	5,718,553	1,346,491	962,461	886,042	(D)	15.5	1,000,425	443,696	(D)	5,276,207	(D)	8.4
35194	Automotive diesel engines	(D)	2,882,595	64,767	339,575	312,613	(D)	10.8	56,819	72,844	(D)	2,642,826	(D)	2.8
35193	Nonautomotive diesel engines	176,071	1,462,694	29,487	449,319	413,643	16.7	28.3	147,369	238,859	293,953	1,287,910	50.1	18.5
35191	Gasoline engines	9,978,173	1,266,742	1,251,293	152,586	140,471	12.5	11.1	796,237	131,993	9,530,282	1,345,471	8.4	9.8
35196	Gas and liquefied petroleum gas engines	8,109	r106,522	944	20,981	19,315	11.6	18.1						

Note: For comparison of Standard Industrial Classification-based product codes, schedule B export numbers, and TSUSA import numbers, see table 10.

(D) Data withheld to avoid disclosing figures for individual companies. rRevised by 5 percent or more from previously published figures.

[1] Source: Bureau of the Census report EM 546, U.S. Exports.

[2] These values were derived by use of adjustment factors to exclude freight, insurance, and other charges incurred in moving goods to the port of export. This adjustment is made to convert the values to an approximation of the producers' value of exported goods. Current adjustment factors are based on data for 1983 which are published in Origin of Exports of Manufactured Products, M83(AS)-5, appendix B. The adjustment factor for this report is 0.9206.

[3] Source: Bureau of the Census reports IM 145-X, U.S. Imports for Consumption and General Imports. These figures include both import value and duty value.

[4] Apparent consumption is derived by subtracting exports from the total of manufacturers' shipments plus imports (including duty). Estimated producers' value is used in the calculation of these data.

Table 10. COMPARISON OF STANDARD INDUSTRIAL CLASSIFICATION-BASED PRODUCT CODES, SCHEDULE B EXPORT NUMBERS, AND TSUSA IMPORT NUMBERS: 1985

Product code	Product description	Export number[1]	Product description	Import number[2]	Product description
35194	Automotive diesel engines	660.4110	Diesel engines specially designed for use in automobiles, trucks and buses	660.4220	Piston-type diesel engines for automobiles, trucks, and buses
				660.4300	Canadian article
35193	Nonautomotive diesel engines:		Nonautomotive diesel engines:		Nonautomotive diesel engines:
	For use in marine craft		Diesel engines specially designed for use in marine craft:	660.4242	Piston-type diesel engines for marine craft, 150 hp. and under
		660.4121	Not over 200 brake hp.		
		660.4123	201 to 300 brake hp.	660.4244	Piston-type diesel engines for marine craft, 151 not over 300 hp.
		660.4125	301 to 500 brake hp.		
		660.4127	501 to 1,000 brake hp.	660.4246	Piston-type diesel engines for marine craft, over 300 hp.
		660.4129	Over 1,000 brake hp.		
	For all other end uses		Diesel engines, n.s.p.f.:	660.4004	Piston-type diesel engines for tractors, 50 hp. and under
		660.4131	Not over 200 brake hp.	660.4006	Piston-type diesel engines for tractors, over 50 hp.
		660.4133	201 to 500 brake hp.		
		660.4135	501 to 1,000 brake hp.	660.4260	Piston-type diesel engines, except automotive and marine craft
		660.4137	1,001 to 1,500 brake hp.		
		660.4139	Over 1,500 brake hp.		
35191	Gasoline engines:		Gasoline engines:		
	For use in marine craft	660.4860	Marine inboard engines with outboard drive		
		660.4865	Marine inboard engines with inboard drive	660.4008	Piston-type engines, except diesel for tractors, 50 hp. and under
				660.4010	Piston-type, air cooled engines, except diesel for tractors, over 50 hp.
	For all other end uses		Gasoline engines, n.s.p.f.:		
		660.4872	Under 6 brake hp.		
		660.4874	6 to 10 brake hp.	660.4012	Piston-type, except air cooled, except diesel for tractors.
		660.4876	11 to 49 brake hp.		
		660.4878	50 and over brake hp.	660.5635	Piston-type engines, under 1 hp.
				660.5640	Piston-type engines, 1 to 25 hp.
35196	Gas and liquefied petroleum gas engines	660.4880	Piston-type natural gas (including LPG) engines	660.5645	Piston-type engines, over 25 hp.

N.s.p.f. Not specially provided for.

[1] Source: 1985 edition Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.
[2] Source: Tariff Schedule of the United States Annotated (TSUSA), 1985.

DESCRIPTION OF SURVEY

Scope of Survey. This survey covers manufacturers of internal combustion engines in the United States except outboard, aircraft, military tank, and non-diesel automotive engines.

Survey Methodology. The statistics in this publication were collected by mail on Bureau of the Census annual Form MA35L, Internal Combustion Engines. The survey panel includes all known domestic manufacturers of the specified types of internal combustion engines, approximately 40 companies.

Reliability of Data. Survey error may result from several sources: (1) inability to obtain information about all cases in the survey; (2) response errors; (3) definitional difficulties; (4) differences in the interpretation of questions; (5) mistakes in recording or coding the data obtained; and (6) other errors of collection, response, coverage, and estimation for missing data. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is due to imputing data for nonrespondents, for late reporters, and for data which fail logic edits. Missing figures are imputed based on yearly movements shown by reporting firms. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are footnoted.

The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is not precisely known, but is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

Revisions to Previous Period Data. Statistics for previous years may be revised as the result of corrected data from respondents, late reports for which imputations were made as described above, or other corrections. Figures which have been revised by more than 5 percent from previously published figures are indicated by footnotes.

Revisions include changes to prior period data resulting from reconciliation of the results of this survey with the 1982 Census of Manufactures and the 1984 Annual Survey of Manufactures to correct differences in reported data between the two series and to identify and verify new establishments included in the scope of this survey. Table 8 presents a comparison of data from the three series by census product class following the reconciliation.

Adjustment for Price Change—All dollar figures included in this publication are in current dollars; i.e., they have not been adjusted for price change.

EXPLANATION OF TERMS

Quantity and Value of Shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable sales to unaffiliated customers; i.e., the value includes an appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Shipments to Distributors and Other Companies. Represents all shipments to affiliated and nonaffiliated distributors plus all other shipments to nonaffiliated companies.

Interplant Transfers. Represents the number and value of engines transferred to other plants of the reporting company for incorporation into machinery or equipment in those plants. Shipments to distributors (whether affiliated with the company or not affiliated) are excluded. Transfers to other plants of the same company are reported at marker value.

Produced and Incorporated. Represents engines produced and incorporated into other products in the same plant, such as construction and farm machinery (including tractors), engine-driven generator sets, and other products incorporating an engine manufactured in the same plant.

Horsepower. A unit for measuring the power of motors or engines, equal to 746 watts or to a rate of 33,000 foot-pounds per minute (the force required to raise 33,000 pounds at the rate of 1 foot per minute).

Piston Displacement. The volume (measured in cubic inches) displaced by a stroke of a piston.

End Application. The end application or use to which the engine was destined. Engines may not ultimately be used for the specific application intended or supposed by the producer.

COMPARISON OF EXPORT, IMPORT, AND DOMESTIC OUTPUT DATA

The Standard Industrial Classification (SIC) system used for domestic output and the statistical export and import commodity classifications were developed independently. This results in considerable difficulty in comparing the three types of data for many commodity areas. The domestic output classification is based on type of industry; on the other hand, the export and import classification system is more materials oriented. Also, there are a substantial number of imported commodities which have no comparable domestic output classification. The relationships

shown in this report should be considered only as approximations, since, in addition to the problems mentioned above, there are also the following problems affecting the comparability of the three sets of data.

Valuation. There are different methods of valuation for the three types of data:

- *Domestic Output*—Valued at the point of production. It includes the net sales price, f.o.b. plant, after discounts and allowances, exclusive of freight charges and excise taxes.

- Exports—Valued at the point of exportation. It includes the selling price, or cost if not sold, and inland freight, insurance and other charges to the export point.
  Estimated producers' values of exports have also been developed. These values more closely approximate the values reported for domestic output because they exclude freight, insurance, and other charges applied from the producing plant to the export point.

- Imports—Valued at the first port of entry in the United States. It includes c.i.f. (cost, insurance, and freight), duty, and other charges to the import point.

Duplication in Quantity and Value of Output. Because producers' shipments of some commodities may be used as materials for incorporation into other commodities, combinations of data for such commodities may contain a certain amount of duplication. Thus, percentages of exports to output or imports to apparent consumption (output plus imports minus exports) at four-digit or broader levels may be understated. Where duplication is known to be substantial, the output data are appropriately noted in the table.

Low-Value Export and Import Transactions. Detailed commodity information is not included for individual export shipments valued at not more than $1,000. Generally, detailed commodity information is not included for individual import shipments valued at not more than $1,000. For textiles and textile products, gloves, footwear, and miscellaneous rubber and plastics products, detailed commodity information is not included for individual import shipments valued at not more than $250. This is believed to have only negligible effects on the statistics for the bulk of the commodities.

Manufacturers' Shipments, Not Specified by Kind. The value of manufacturers' shipments at the four-digit industry level often includes a small amount which is not distributed among the individual five-digit product classes. Export and import percentages at the more detailed levels might, therefore, be slightly overstated.

Time Lag Between Output and Exports. There will be a lag between the time a commodity is produced or shipped by the producer and the time it is actually exported, especially when intermediaries (wholesalers, exporters, etc.) are involved. Ordinarily, this type of discrepancy is insignificant in annual figures.

"Direct" vs "Total" Commodity Exports and Imports. Export and import data do not include materials which are incorporated into other more finished products and exported or imported in finished form. Thus, by showing only direct exports and imports, the relation of exports to output and imports to apparent consumption for intermediate products is considerably understated.

Used Commodities. With a few exceptions, used or rebuilt commodities are classified in the same import or export codes as is new merchandise. Percentages are thus overstated to the extent that used or rebuilt products are significant in trade.

Geographic Area of Coverage. Import and export data reflect the movement of merchandise into and out of U.S. foreign trade zones, the U.S. Virgin Islands, and the U.S. customs territory (includes the 50 States, the District of Columbia, and Puerto Rico).

HISTORICAL NOTE

Data on internal combustion engines have been collected by the Bureau of the Census since 1943. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. A list of these libraries may be obtained from the Bureau of the Census regional offices:

Office	Telephone
Atlanta, Georgia	(404) 881-2271
Boston, Massachusetts	(617) 223-2327
Charlotte, North Carolina	(704) 371-6142
Chicago, Illinois	(312) 353-6251
Dallas, Texas	(214) 767-0621
Denver, Colorado	(303) 234-3924
Detroit, Michigan	(313) 226-7742
Kansas City, Kansas	(816) 374-4601
Los Angeles, California	(213) 209-6616
New York, New York	(212) 264-3860
Philadelphia, Pennsylvania	(215) 597-4920
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Current Industrial Reports		
M33A	Monthly	*Iron and Steel Foundries*
M33E	Monthly	*Nonferrous Castings*
MA35D	Annually	*Construction Machinery*

Series	Frequency	Title
MA35P	Annually	*Pumps and Compressors*
MA36H	Annually	*Motors and Generators*
Other Industry Reports		
M3-1	Monthly	*Manufacturers' Shipments, Inventories, and Orders*
(AS)	Annually	Annual Survey of Manufactures (ASM)
(MC)	Quinquennially	Census of Manufactures
Foreign Trade Reports		
EM546	Monthly	*U.S. Exports*
IM145-X	Monthly	*U.S. Imports for Consumption and General Imports*

CONTACTS FOR DATA USERS

Subject Area	Contact	Phone Number
Current Industrial Report MA35L	Ed Coan	(301) 763-5547
Foreign Trade publications	Joyce Ware	(301) 763-5140
Census/ASM	Dale Gordon	(301) 763-7304
To order a Census Bureau publication	Customer Services (DUSD)	(301) 763-4100
International Trade Administration	Rolf R. Nordle	(202) 377-0305

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